

**ABSTRACT OF THE DISCLOSURE**

The invention relates to methods of identifying inhibitors of tryptophan synthase (TS) that are useful as herbicides, the TS inhibiting herbicides, methods of designing variants of the TS enzyme that are resistant to the herbicides of the invention and other known herbicides, the TS enzyme variants themselves, polynucleotides encoding these

5 TS enzyme variants, plants expressing the TS enzyme variants, and methods of weed control.

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